

1. INTRODUCTION

The basic objective of all parties involved in the publication and distribution of this Guide is to prevent losses of life, property and natural resources, and disruption of train operations as a result of fires which may be caused by the operation and maintenance of railroad systems.

It is mutually agreed that the most effective means of attaining the above objective is a cooperative approach. There are numerous ways in which this cooperation can be implemented. They include, but certainly are not limited to, joint planning meetings, cross-training sessions, joint inspections, notification of critical fire weather, and fire patrols.

There are a variety of formats for planning meetings. The most effective meetings four routine operations have been annual or semi-annual at the operating unit level, usually a railroad division. All protection agency units should be represented in order to secure uniformity of interpretation and enforcement. Care should be exercised not to overwhelm the company representatives with agency employees.

Company representatives should include maintenance-of-way, train operations and mechanical personnel at both division and corporate levels. Both the company and the protection agency's work plans and inspection programs are to be discussed at these meetings. It is best to limit the agenda for any individual meeting to those topics which can be discussed and resolved in two to three hours.

Contact between agency and company personnel should not be restricted to these planning meetings or an occasional training session or inspection. The people who have been most successful at reducing railroad fire occurrence are those who communicate with each other on a regular basis. They advise each other of observed conditions and practices which may present a problem. Whether violations or not, alternatives should be suggested.

Railroad companies and fire protection agencies have thorough and efficient training programs for their employees. However, much remains to be done in conducting such training with mutual assistance between parties. Agency employees, especially inspectors, need an understanding of railroad operations, mechanical equipment, identification and safety hazards, which railroad employees are most qualified to teach. Railroad employees need to know fire control methods, how to identify fire hazards, and interpretation of laws and regulations.

Joint inspections, although sometimes difficult to arrange and not always feasible, provide excellent on-the-job training. It should be noted they can promote mutual understanding and trust. For safety reasons, mechanical equipment inspections should always be joint.

Fire agency employees can promote a spirit of cooperation and assistance to the railroads by observing and reporting broken or damaged equipment or cargo to the railroad companies.

Most railroad field employees are equipped with two-way radio communication. These radios make it possible to report fires, fire hazards, fire risks or hazardous occurrences to protection agencies. This reciprocates the cooperative effort, which is especially appreciated during critical fire weather.

The railroad companies have responsibilities for inspection of railroad rights-of-way (R/W) and

mechanical equipment. Fire protection agencies have responsibilities for assuring that the railroad companies are in compliance with the law.

The protection agencies' inspection responsibilities are primarily regulatory. They should make sample inspections (spot checks) of rights-of-way, rolling stock and other equipment. Unless a fire has occurred, locomotives and cars should only be inspected in yards or service areas. The purpose is to ensure compliance with regulations and to determine the specific causes of problem areas. The protection agency should always notify the company in writing (LE-38) of its findings, even when the inspection has been conducted jointly with a company representative. Agency inspections will also be made for investigation of the causes of fires that have already occurred.

1.1 Railroad Transportation Systems

The primary purpose of railroad transportation systems is to move heavy or bulky freight from one place to another over land. In addition, certain specialized operations such as Amtrak and some excursion trains haul passengers. A very few, particularly historic or scenic railroads, provide settings for movies and TV programs. In all cases, management's goal is production and profit with safety to cargo, passengers, company personnel and property. With the exception of Amtrak and a few small municipally or district-owned feeder lines, all railroads are privately owned. They must, therefore, show a profit or be part of an integrated company that shows a profit, otherwise they will go out of business or be absorbed by some other company.

The great majority of the trackage and rolling stock in California is owned and operated by two large companies. The remainder is spread among more than a dozen small companies. Some of these are owned by one of the giant corporations but operate under a separate name. Lumber companies own others. Only a few small railroads are truly independent. The large organizations/corporations who hold ownership of these railroads function similarly to the government agencies with which they interact.

The departments with which fire protection agencies have most frequent contact are maintenance-of-way, mechanical and train operations. Other departments, which must be dealt with occasionally, include claims, traffic, legal, etc. The small companies are much less complex. Most business with them can be transacted through one or two persons.

Line-staff relationships vary from company to company. In some companies, the staff functions at the division level follow those at corporate headquarters. In these cases, roadmasters, trainmasters, claim agents, etc., report to the division superintendent. In other companies division superintendents supervise train operations only. Therefore, protection agency personnel should make special effort to acquaint themselves with the organizational pattern of the particular company(s) with which they must deal.

Railroads are tightly regulated public utilities. There are literally hundreds of federal and state laws, rules and regulations applying to their operations. Many apply directly while others (e.g., air pollution control, environmental protection, etc.) apply indirectly. Most of the direct regulations relate to passenger, employee, cargo or equipment safety. The majority of the indirect regulations are for the protection of the general public and adjoining property. Generally fire laws are regulations which fall in the latter category.

Unfortunately sometimes two or more of these regulations directly conflict with each other, or appear to do so. An example of this is a rule of the Federal Railroad Administration (49CFR218.37) requiring slow-moving trains in areas not controlled by block signals to drop lighted fusees from the train. This appears to be in direct opposition to the fire laws of several states and regulations of the U.S. Forest Service, another federal agency; however, the statute requires compliance with federal, state and local fire laws.

“Pool Agreements” have been entered into by a number of railroad companies to resolve this dilemma, in the interests of time and efficiency. Under the terms of these agreements, trains with distant destinations move smoothly from the tracks of one company to another, often with only a change of train crew.

Pool agreements affect the fire problem in several ways. Some of the railroad companies sending engines into California through these agreements have no shop facilities here. Most agreements limit the maintenance or repair work that will be done by the receiving road. Under existing agreements, little can or will be done to a defective locomotive until it returns to its home road. Also, some of these companies have little or none of their own track in California. In such instances they may not be aware of operations under California laws, particularly those relating to exhaust carbon particles.

Therefore, it is not uncommon for out-of-state equipment to be in violation of California law, thus imposing a legal and financial liability on the receiving road. It is the carrier of faulty equipment, which is responsible for compliance and/or fire damages and suppression costs, not the owner.

1.2 Issues

Courts and legislatures mid nineteenth century first noted the risk of fire damage due to railroad operations. This recognition has led to the adoption of “strict liability” laws in the American legal system.

Numerous states have suited statutes making railroad companies strictly liable, without negligence, for fires set by their operations or rolling stock, or providing that the fire shall be conclusive as to negligence. Such statutes have been held constitutional as reasonable measures for the protection of property and the adjustment of an inevitable risk. California has a statute, Public Resources Code Section 4435, which establishes a rebuttable presumption of negligence and makes the act a misdemeanor.

The reasons for such legal concern were obvious during the days of the wood-fired steam locomotive with no screen on its stack. Each step in the evolution of locomotives (to coal-fired steam, to oil-fired steam and to diesel-electric) brought prophecies ending the fire problems caused by railroads. Unfortunately all of these high hopes were doomed for two reasons.

First, any combustion process produces carbon in some form. Carbon chunks; chips, flakes, etc., are hot enough when ejected to start fires. Second, the early preponderance of fires caused by exhaust obscured the fact that large numbers of fires were originated by other factors inherent in railroad operations, especially cast iron brake shoes.

Our goal, in which we are adamant, is to reduce railroad-caused fires. That it is possible to make significant progress in this direction has been demonstrated in certain protection units and railroad

divisions. One of the primary purposes of this Guide is to make those successful methods available for use elsewhere.

The railroad fire problem is basically composed of two parts: risks and hazards. Risks are the sources of ignition. The two most common of these are exhaust carbon particles and brake shoe fragments. Others include hazard reduction burning escapes, grinding, cutting and welding, smoking, discarded fusees, etc. The primary methods of reducing risks are mechanical engineering, inspection, fire prevention education, rules and regulations.

Hazards are the flammable materials which may be ignited by the various risks. The areas of primary concern in this publication consist mainly of dry vegetation such as grass, leaves, pine needles, tumbleweeds, punky logs, dead brush, etc. Other possible hazards include wooden bridges, snowsheds and trestles, buildings, accumulations of paper or rags, rolling stock, etc. The primary method of reducing hazards is to remove or fireproof them for a sufficient distance from the risks. This may be done by mechanical or physical removal, by burning or by chemical treatment.